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EXAMINER

SHENG, TOM V

ART UNIT PAPER NUMBER

2629

DATE MAILED: 10/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/743,736	Applicant(s) SATO ET AL.	
	Examiner Tom V. Sheng	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004 and 24 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>9/23/04, 3/3/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1, 3 and 6 are objected to because of the following informalities:

As for claim 1, line 16, please change "circuit" to --circuits-- because a plurality of comparing circuits are involved with the plurality of sampling circuits.

As for claim 3, lines 30-31, please delete redundant limitation, "in response to an alternating signal outputted from the outside".

As for claim 6, lines 6 and 9, please change "clocks" to --the clock-- and "clocks" to --clock--, respectively, because only one clock is selected for counting in the counter.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 3, 4, 5/3, 5/4, 6/3, 7, 8/3 and 8/4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As for claim 3, line 16, it is unclear as to the meaning of "polities" in the context of the claim. Claims 4, 5/3, 5/4, 6/3, 7, 8/3 and 8/4 are dependent on claim 3.

Claim Rejections - 35 USC § 102

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Janssen et al. (US 6,429,858 B1), hereinafter Janssen.

As for claim 1, Janssen teaches a display device (fig. 1) comprising:

a display part (liquid crystal display 10) having a plurality of pixels;

a plurality of video signal lines (column conductors 12) which apply a video signal voltage (analog column voltages) to the plurality of pixels (located at intersections of column and row conductors; column 4, lines 18-31); and

a drive circuit (circuits 20, 22, 24, 25, 26 and 28) which supplies the video signal voltage to the plurality of video signal lines (driving column conductors 12 as shown),

wherein the drive circuit includes:

a) a storage circuit (column/pixel registers 28) which stores display data (desired brightness level of each pixel; column 4, lines 50-52) inputted from the outside (inherently from a video source via a CPU or graphics controller);

b) a reference data generating circuit (counter 24) which generates reference data (corresponding counter output as shown);

c) a ramp voltage generating circuit (ramp generator 22) which generates a ramp

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voltage (an increasing or decreasing ramp signal depending on count output from counter 24; column 4, lines 35-45);

d) a plurality of comparing circuits (comparators 26) which compare the display data stored in the storage circuit and the reference data generated by the reference data generating circuit (for each column a comparator 26 compares the counter output with a number stored in a pixel register 28 of the same column; column 4, lines 46-52), and

e) a plurality of sampling circuits (track and hold circuits 20) which sample the ramp voltage generated by the ramp voltage generating circuit based on a result of comparison of the comparing circuit (each circuit 20 stores a voltage equal to the instantaneous output of the ramp generator 22 based on a pulse from a corresponding comparator 26; column 4, lines 53-59) and output the sampled ramp voltage as a video signal voltage to respective video signal lines (at the end of each ramp cycle, the voltages stored in the circuits 20 are supplied to the pixels via the column conductors 12; column 4, lines 60-62),

wherein the reference data (counter output) generated by the reference data generating circuit (counter 24) is changed non-linearly with respect to time (fig. 4; multi-phase clock driver circuit generates 4 phase-shifted clock pulses and one of which can be selected for sampling from several analog levels, based on the two LSBs of the data word in the column data register 28. This selection step has the effect of producing non-linear counter output over each ramp cycle.). See column 6, line 41 to column 7, line 6.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 2, 8/1 and 8/2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Janssen.

Claim 2 is similarly analyzed as claim 1, except for the additional limitations, "a plurality of sampling circuits which sample the ramp voltage of positive polarity or the ramp voltage of negative polarity generated by the ramp voltage generating circuit in response to an alternating signal inputted from the outside."

Janssen also teaches generating both increasing and decreasing ramp voltages (alternatively by the ramp generator 22) that are inherently used for positive and negative polarity pixel data.

However, Janssen does not teach using an alternating signal to select whether the ramp voltage of positive polarity or the ramp voltage of negative polarity is to be sampled as the driving voltage. On the other hand, Janssen's display is a liquid crystal display and inversion driving is well known in order to prevent sticking effect of the liquid crystal elements. Whether it's line, column or dot inversion, there would be a mechanism to control the polarity for respective pixels.

Therefore, it would have obvious to one of ordinary skill in the art, at the time of the invention, to provide an alternating signal for the purpose of selectively sampling the

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ramp voltages of positive or negative polarity, in order to facilitate inversion driving so as to prevent sticking of liquid crystal elements.

As for claims 8/1 and 8/2, Janssen does not teach that the drive circuit is integrally formed on a substrate on which the display part is formed using thin film transistors. Official Notice is taken of both the concept and advantages of providing the drive circuits on the same substrate as for the thin film transistors used in the display panel. It would have been obvious to use the same substrate for both the display pixel circuits and the driving circuit because of considerable saving in the size of the display apparatus.

Allowable Subject Matter

8. Claims 6/1, 6/2, 7/6/1 and 7/6/2 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and with objections above corrected.

9. Claim 3 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. Corresponding dependent claims would become allowable.

10. The following is a statement of reasons for the indication of allowable subject matter: none of the prior arts of record teaches the limitations, "the sampling circuit includes a first sampling circuit ... a second sampling circuit ... a first switching circuit ... a second switching circuit ..." of claim 3, "a selection circuit ... a counter ... a control

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part ..." of claims 6/1 and 6/2. Claims 7/6/1 and 7/6/2 are dependent on claims 6/1 and 6/2 respectively. For reference see the sample holding circuit 150 in fig. 17.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tom V. Sheng whose telephone number is (571) 272-7684. The examiner can normally be reached on 9:00am - 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571) 272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tom Sheng
September 30, 2006

AMR A. AWAD
SUPERVISORY PATENT EXAMINER

